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July 29, 2021

968746

Ms. Jennifer Knoepfle, Remedial Project Manager
United States Environmental Protection Agency, Region V
77 West Jackson Boulevard
Chicago, IL 60604-3590
Mail Code: SR6J

RE: Responses To USEPA Comments on SERGC Site Semi-annual Groundwater Monitoring Report
for November 2020 Event

Dear Ms. Knoepfle,

by Nationwide Environmental Services, Inc. (NES), on behalf of the City of Rockford (City), for the groundwater monitoring event conducted at the Southeast Rockford Groundwater Contamination Site (Site) in November 2020. The responses to comments were reviewed with the City prior to submittal and are provided in Attachment 1, with comments presented using matching numerical designation in the agency correspondence, followed by the response for the respective comment in bold type.

The reporting requirements established under the Operation and Maintenance (O&M) Plan for the Site, as defined in Task 2 of the Remedial Design and Remedial Action (RD/RA) Statement of Work (SOW), Appendix C to the Consent Decree (CD), provides for the submittal of validated monitoring well data in writing to the U.S. EPA and Illinois Environmental Protection Agency (IEPA) for the duration of the Site remedy O&M period. Under the RD/RA SOW the information obtained through the groundwater monitoring program will be utilized by U.S. EPA and IEPA for: (1) assessing the need for future water main extensions and water service connections; (2) predicting the movement of groundwater contamination and any potential impact on the municipal water supply; and (3) evaluation of the impact of groundwater contamination, if any, on the Rock River.

We note that certain comments issued by U.S. EPA imply revisions to future groundwater monitoring reporting for the Site, which represent an expansion of the scope identified for O&M tasks in the RD/RA SOW, and consequently the scope of work contracted with the City for the Site O&M groundwater monitoring program. Those comments and respective responses that involve additional reporting effort are identified as such.

Sincerely,

William B. Dotterrer

William B. Dotterrer, Sr. Project Mgr.

Pc: Nadine Miller, City of Rockford
Brian Conrath, IEPA

Responses to U.S. EPA Comments on SERGC Site
Semi-annual Groundwater Monitoring Report – February 2021

General Comments

1. The site boundaries for SERGCSS are as defined in the 1995 OU2 Record of Decision (ROD). “The study area was later expanded to an area of ten square miles with boundaries that now include Broadway to the north, Sandy Hollow Road to the south, Mulford Road to the east and the Rock River to the west. The original site boundaries and current study area are noted on page 2 (Page 1 of 1995 OU2 ROD).”

Remove the “study area” outline in Figure 1 and legend description and replace with the “site boundary” as defined above. This is a global comment for all future figures involving the boundary of SERGCSS. This is important as other stakeholders, such as Illinois Department of Public Health have recently used these semi-annual groundwater reports to delineate the site; the “study area” is incorrect.

Response: Figure 1 will be revised in accordance with the comment to represent the Southeast Rockford Groundwater Contamination Site (Site) boundary, consistent with expanded Site description in the 1995 OU2 ROD.

2. Although the introduction of this report indicates, “limited data interpretation summary”, analytical data results and collected groundwater levels, at a minimum, need to be presented spatially to see distribution across the site and to assess operable unit 2 (OU2) groundwater sitewide conditions (e.g., natural attenuation, groundwater flow direction).

- a. Analytical results should be plotted on a figure or figures with analyte concentration contour lines, as appropriate, so data can be visualized and understood spatially for each event. This is appropriate for total and select individual volatile organic compounds (VOCs) and 1, 4 dioxane results.
- b. Additionally, although the time-series plots show discrete information over time, seeing how the plume changes (using the OU2 monitoring well information) would benefit OU2 sitewide understanding. EPA is not suggesting that each season or each year be plotted all together but based on evaluation of the trend data or other information (e.g., 1995 and 2012), specific past years could serve as “benchmarks” and warrant visualization along with the current presented data. For example, applying contour lines of screening levels/maximum contaminant levels (MCLs) and other larger incremental values (e.g., 10, 50, 100, 1000 ug/L, etc.), as appropriate, to the data set might provide a more substantive sitewide understanding from a figure than from discrete variability as shown on the plots. The plots are important, but do not provide a full picture of the OU2 sitewide analytical results. Locations where data are absent can have dashed contours in those areas.
- c. Groundwater elevation data should be presented as potentiometric maps with flow direction indicated. Areas of uncertainty can be presented as such (dashed lines). Include information on if the municipal wells were pumping during monitoring well sampling events.

Response (a,b,c): *The groundwater monitoring report content identified in the comment is an expansion of the scope identified for Operation and Maintenance (O&M) tasks in the RD/RA SOW (Appendix C to the Consent Decree [CD]), and an increase in the scope of work contracted with the City.*

NES can revise the semi-annual groundwater monitoring report to include the concentration contouring for shallow, intermediate and deep aquifer zones intercepted by the groundwater monitoring network, although inclusion of the expanded reporting on a semi-annual basis does not seem warranted by the small differences in site groundwater conditions occurring over a six-month period. It is suggested that submittal of a separate remedy performance evaluation report on a periodic basis (2-year) containing the content identified in the comment would provide a more beneficial means to provide the identified information.

Remedy performance evaluation reporting has been periodically performed in the past by NES at the request of the City; such evaluation has presented a more thorough analysis and interpretation of site groundwater monitoring data and site conditions than is routinely provided under the established groundwater monitoring program O&M reporting. The 2004, 2009, and 2012 remedy performance evaluation reporting was performed as an additional O&M task upon authorization from the City and addressed changes in the VOC plume extents over time at depth relative to Site source areas, and included graphic representation of VOC concentrations, COC contaminant speciation by well location and assessment of VOC plume relative to site clean-up standards.

From Table 3, it appears that groundwater elevations across the site span more than 115 feet (ft) in elevation (685 ft above mean sea level (amsl) – 800 ft amsl). Are wells screened in more than one aquifer, or various hydrogeologic units that would possibly influence preferential flow of contaminants across the site? Groundwater elevations and flow information and assessment should be included in report text.

The individual wells comprising the Site ground water monitoring network are screened at a single interval, and wells located in well clusters (e.g., MW-206 (A,B,C) screened at intervals specific to the respective well depth, based on hydrologic evaluation performed during the Remedial Investigation/Feasibility Study (RI/FS).

The locations and installation details for monitoring wells (35) comprising the groundwater monitoring network at the SERGC site were established in the RI/FS. Twenty-six monitoring wells existed at the Site prior to initiation of remedial actions implemented under the 1995 OU2 ROD. The existing groundwater monitoring wells at the Site were installed by others and were placed for the purpose of defining the extent of groundwater contamination thought to be occurring from source areas within the Site study area and were not located with the specific purpose of intercepting the groundwater plume since the predominant groundwater contamination migration pathway was not known at the time. The installation information for these 26 monitoring wells (e.g., TOC, total depth, screened intervals etc.) was obtained from historical information prepared by others and is presented in the semi-annual monitoring reports, Table 4.

The RD/RA SOW (Appendix C to the CD) identified 9 new monitoring wells to be installed to expand the groundwater monitoring network as an element of the remedial action for OU2. The well locations and installation specifications were identified in Attachment A to the CD SOW and were selected based on the results of the groundwater investigation studies conducted during the RI/FS

phase of the Site remedy, which indicated the need for additional wells along the western part of the Site to meet the objectives of the RD/RA SOW. Neither the City or its remedial contractor were involved in the determination of well location or well installation criteria (i.e., well depth, screen interval, etc.). The siting information for the 9 additional site monitoring locations is presented in the semi-annual reports, Table 4.

3. Additional types of figures to consider including in the reports to illustrate spatial distribution and trends are as follows. Please note, these screenshots presented below are not peer-reviewed and although the data are from November 2020 report, limited data were used (or from a particular depth range) and are for illustration only.

a. A spatial plot of the trend direction (trend of up, down, or none for the recent past) could help reveal where problem areas are in one graphic. The plot below is of their linear trends as presented in Figure 2; not the recent past trend except for MW 204 and MW-117B.



b. This plot combined with a plot of the magnitude of the most recent total VOC (see below) can further refine where the larger problem areas are in a more spatial way.



Response (a,b): The groundwater monitoring reporting content identified in the comment is an expansion of the scope identified for groundwater monitoring reporting under the O&M tasks in the CD SOW, and an increase in the scope of work contracted with the City.

The semi-annual groundwater monitoring report can be revised to include spatial distribution and concentration trends for shallow, intermediate and deep aquifer zones intercepted by the groundwater monitoring network upon concurrence by the City. As noted in response to the prior comment, remedy performance evaluation reporting has been periodically performed in the past by NES at the request of the City presenting a more thorough analysis and interpretation of site groundwater monitoring data

than that currently provided under the established groundwater monitoring program O&M reporting. Submittal of a periodic remedy performance evaluation report containing the content identified in the comment would provide a more expedient means to provide the information requested.

4. Please note that the Illinois Section 620 Groundwater Quality Standard for 1,4 dioxane is 7.7 µg/L. However, the state is in the process of promulgating 0.78 mg/L for 1,4 dioxane. 1,4 dioxane data should be screened against the 7.7 µg/L. However, the lower limit should also be considered, particularly when evaluating results that fall between 0.78 µg/L and 7.7 µg/L.

Response: Table 2b contained in the semi-annual groundwater monitoring report will be revised to highlight 1,4-dioxane results exceeding the existing Illinois Section 620 Groundwater Quality Standard (7.7 ug/L) and pending standard (0.78 ug/L) at such time as it is promulgated.

5. A Uniform Federal Policy-Quality Assurance Project Plan (UFP-QAPP) will need to be prepared to include updated information including 1,4 dioxane sampling and analyses, electronic data deliverables to EPA, etc. and should be referenced in the groundwater monitoring reports.

Response: A revised Uniform Federal Policy-Quality Assurance Project Plan (UFP-QAPP) has been prepared for the Site presenting 1,4 dioxane sampling and analyses procedures and associated electronic data deliverables. The final draft version of the UFP-QAPP document has recently been updated to represent current project personnel and will be submitted to US EPA and referenced in future groundwater monitoring reports.

6. Editorial Comment:

- a. Spell out acronyms upon first usage in each report. For example, SPME, GC/MS with SIM, COC, VC, etc.
- b. Well identifiers and chemical names used in the text, tables, and figures should be consistent throughout the document. Inconsistency in terminology could make searching documents and electronic data deliverables difficult. Examples from this report include
 - MW-101A vs MW101A
 - 1,4-dioxane vs. 1,4-Dioxane
 - MW-204 vs. MW 204

Response: Editorial items identified in the above comment (e.g. acronyms, well identifiers, chemical names) will be addressed in future reports.

Specific Comments

1. Page 1. Paragraph 5. Graphs in Figure 2 are termed trend graphs, but the trend lines shown on these graphs have not been described and are not mentioned in the report text. There is no description of how the lines were computed (linear regression?), what they represent, or how they should be interpreted. Please include this information in the report text. Figure 2 graphs would more accurately be described as time-series plots.

Response: The groundwater monitoring report text will be revised to include a description of the information contained in the Figure 2 graphs, both for VOC concentration plots and associated concentration trend lines.

No statistical analysis of the groundwater monitoring analytical results is performed as part of the routine groundwater monitoring reporting for the Site. The concentration trend graphs presented in Figure 2 of the semi-annual groundwater monitoring report are simple linear regression interpretations of entered data to assist in visual assessment of VOC constituent concentrations over time, and for which the Microsoft Excel program application is used.

2. Page 3. Bullet 1. "MW-203 was sampled with a portable low flow sampling pump. The permanent well pump installed in the well has been removed by an unknown party." This appears to be a change in sampling procedure from the 2017 QAPP, therefore, additional details pertaining to the use of this pump (e.g. type, size, make, model), decontamination procedure used, purge rate if different from the QAPP, sampling rate if different from the QAPP, and any other special pump considerations needs to be included in the body of the report as well as Appendix B. There is no mention or indication of the alternate pump mentioned on the Field Report page for MW-203. The same sentence, as quoted above, is included at the beginning of Appendix B, no other details were found about this change from the UFP-QAPP sampling procedure. A "Deviations and Issues" (or similarly named) section should be added to future reports to document and track such changes.

Response: A Deviations and Issues section will be included in future reports to specifically identify and describe any sampling event occurrences which represent a departure from field sampling analytical procedures contained in the QAPP, such as the use of a portable sampling pump. Efforts are in progress to replace the dedicated sampling pump removed from the MW-203 monitoring location.

3. Page 3, Paragraph 4. Sentence 2. Revise this paragraph to include the following.
 - a. Please include a comprehensive list of variability factors, particularly if no evaluation of potential variability causes is conducted. This list could include natural degradation, volatilization, dispersion, dilution, and sorption of the VOCs. Variability could also be caused from episodic inputs of the contaminants of concern (COCs) at source areas rather than a continued relatively constant leaching from source area(s).
 - b. What groundwater pumping rates are being referred to in this sentence (e.g. pumping during sampling, pumping from nearby private, industrial, or municipal supply wells)?
 - c. If known pumping wells exist and influencing the monitoring wells, these should be shown on a Figure(s) and their impact discussed (are they actively pumping during sampling, what is the rate, what is the impact, etc.).

Response: No specific information is obtained from separate sources to determine the cause of variability in COC concentrations measured at the Site. The text simply identifies potential factors that may be contributing to such variability based on cursory knowledge of activities occurring in and around the Site (e.g. Source Area 7 remediation). The reference to groundwater pumping rates is not tied to any specific occurrence but is rather just one factor considered that may be occurring at Site source areas or adjacent properties. Paragraph 4 can be removed from future reports in that it is only meant as a general observation and not tied to specific known conditions at the Site or impact to groundwater.

4. Page 3. Paragraph 5. Has there been an evaluation of how/if groundwater elevation fluctuations impact COC concentrations? This is a straightforward evaluation that should be included and discussed in the semi-annual monitoring reports.

Response: No evaluation of the effect of groundwater elevations on COC concentrations is performed as part of the routine groundwater monitoring reporting for the Site. As is the case with the previous comment and response, Paragraph 5 can be removed from the report in that it is only meant as a general observation and not tied to specific known data or conditions at the Site.

NES can revise the semi-annual groundwater monitoring report to include analysis of COC concentrations relative to changes in groundwater elevations, however as noted in prior responses to comments, such effort would be an expansion of the scope identified for O&M tasks in the CD SOW, and an increase in the scope of work contracted with the City. If such evaluation is deemed to be required, submittal of a periodic remedy performance evaluation report containing the content identified in the comment may be a more expedient means to provide the information requested.

5. Page 4. Text and Tables.

- Exceedances of MCLs are described in the report text. A table or list in the text that show the MCL values for the COCs would be useful.
- Highlight concentration values that exceed MCLs in the table below, and similar ones in this section of the report (to be consistent with Table 2a). Include report text (and table notes where applicable) that highlighted values indicate a result exceeds the MCL.

The analytical results for groundwater quality samples collected from well locations proximate to or downgradient from Area 7 which show material increases (>20%) in COC concentrations from the previous monitoring event are summarized below.

Monitoring Location	Compound	Current Conc. (ug/L)	Prior Conc. (ug/L)
MW 101A	1,1,1-TCA	91.4	23.7
	1,1-DCA	43.7	19.0
	1,1-DCE	3.4	2.2
	CFM	2.9	0.53
	cis-1,2-DCE	26.1	4.5
	PCE	6.6	1.4
	trans-1,2-DCE	1.8	0.85
	TCE	11.4	2.5

Response: The tables contained in the report presenting changes in concentrations from the prior sample event will be revised to include MCL values for the respective compounds and analytical results exceeding the respective MCL will be highlighted in the text. The report text will be revised to address compound concentrations exceeding MCLs in the tables for each source area.

6. Figure 1.
- Change the study boundary as described in General Comment #1.
 - Indicate the reference for the yellow plume, instead of "circa 1995". There is also a 2012 sitewide plume evaluation (included source areas data). Figure 1 Site Map could include the "baseline" 1995 OU2 plume and the 2012 sitewide plume. Does NES have a more recent plume extent than 2012 they could also include? Note, there will be a 2021 sitewide plume evaluation inclusive of source areas data.
 - Also, what does the yellow inside the plume indicate? Total VOC concentrations greater than ...? Or Total VOC concentration detections vs non detects. Please specify.

Response: Figure 1 will be revised to show the updated site study boundary, consistent with the 1995 OU2 ROD. The VOC plume representation is for VOC concentrations detects, circa 1995.

7. Figure 2. As mentioned in Specific Comment #2, there is no description in the report text what the dashed lines on the graphs in Figure 2 represent or how they were determined, this information needs to be included in the text and also in the figure legend. Consider the following in evaluation of the data over time:

- a. LOWESS (locally weighted scatterplot smooth): In several cases, the dashed lines don't represent the trend of the data all that well (poorly correlated linear trend, if regression?). A couple noted examples are MW-102C and MW-203 where there is greater variability in the data over time than in some other monitoring wells; and MW-204, MW-117B, and MW-124 that show an overall decreasing trend, but the last several years have shown a substantial increase in total VOCs. The data variability would be captured better in a LOWESS curve than a linear regression line while still providing a general trend that could be examined more closely over shorter segments (e.g., particularly over the last few years). The trend over the last 2-3 years set in a context of the trend over the historical period would be more indicative of the progress toward managing the cleanup of this Site than the overall linear trend from 1993 – present.
- b. Trend Test: Consider using Mann-Kendall, Sen's, or similar trend analysis to evaluate trends over time as stable, decreasing, or increasing.

Response: A description of the data interpretations represented by the concentration data graphs will be included in future reports.

No statistical analysis is performed for groundwater monitoring data generated for the Site as part of the routine groundwater monitoring reporting. The concentration graphs presented in Figure 2 of the semi-annual groundwater monitoring report are simple linear regression interpretations of entered data to assist in quick visual assessment of VOC concentrations over time, the function for which is applied in the Microsoft Excel program.

Inclusion of statistical analysis of Site groundwater data in the routine groundwater monitoring report would be an expansion of the scope identified for Operation and Maintenance tasks in the CD SOW, and an increase in the scope of work contracted with the City. NES can revise the semi-annual groundwater monitoring report to include concentration data trend interpretation over time, though submittal of a separate periodic remedy performance evaluation report, at intervals supported by the variability in Site groundwater monitoring data may be a more expedient means to provide the information identified in the comment.

8. Tables 3 and 4.

- a. Top of casing (TOC) well depth is not the same for MW-16, MW-47, MW-101A, MW-102A, MW-102B, MW-102C, MW-114A, MW-114B, MW-117D, MW-201, MW-205A, MW-205B, and MW-206C in the two tables. It is noted that the TOC well depth is from field reports on Table 4, but shouldn't it match the values in Table 3? The values of total depth below ground surface (bgs) and TOC should be verified on both tables.
- b. According to Table 4, wells MW-117C and MW 204 are completed more than 1-foot bgs. This depth interval seems large and should be verified particularly in wells that are 0.5 feet or greater below the land surface (e.g., MW-113A, MW-136, MW-203, MW-206B, MW-206C).

- c. When subtracting the water level in Table 3 from the TOC elevation in Table 4 several water levels are different than what is reported in Table 3. These values should be verified. The assumption was made (because it was not documented in the report) that the water level reported in Table 3 references TOC. Note, these discrepancies appear to coincide with wells that were footnoted in Table 4 as having been adjusted to reflect a 2017 survey. Please revise or include document discrepancies/changes as appropriate (see table below).
- d. Wells MW-102B and MW-102C have location coordinates that are integer numbers (no digits to the right of the decimal). It seems to be unusual for surveyed data to be integer values. These coordinates should be verified and corrected as appropriate.

Response: The actual monitoring well siting data (e.g., locations, TOC elevations, well depth, etc.) is contained in Table 4. Table 3 contains relic information that was not updated to match monitoring well resurvey information (2017). Table 3 will be updated to match well data in Table 4. Well location data for WM-102B and MW-102C will be updated to show actual survey coordinates.